

	Hits	Search Text	DBs
1	2	((("4473613") or ("5885678")).PN.	US-PGPUB; USPAT; USOCR
2	731	mayes.xp.	US-PGPUB; USPAT; USOCR
3	1	("5422168").PN.	US-PGPUB; USPAT; USOCR
4	7707	mordant	US-PGPUB; USPAT; USOCR
5	40660	barium adj sulfate	US-PGPUB; USPAT; USOCR
6	64	S4 same S5	US-PGPUB; USPAT; USOCR
7	232779	formic adj acid or magnesium adj bromide or sulfonic adj acid	US-PGPUB; USPAT; USOCR
8	131	S4 with S7	US-PGPUB; USPAT; USOCR
9	1987	mordant	EPO; JPO; DERWENT; IBM_TDB
10	1306	decor	EPO; JPO; DERWENT; IBM_TDB
11	171	high adj pressure adj laminate	EPO; JPO; DERWENT; IBM_TDB
12	35	low adj pressure adj laminate	EPO; JPO; DERWENT; IBM_TDB
13	1769	decorative adj laminate	EPO; JPO; DERWENT; IBM_TDB
14	3	S9 and (S10 or S11 or S12 or S13)	EPO; JPO; DERWENT; IBM_TDB
15	363	mordanting	EPO; JPO; DERWENT; IBM_TDB
16	0	S15 and (S10 or S11 or S12 or S13)	EPO; JPO; DERWENT; IBM_TDB
17	28	S9 and laminate	EPO; JPO; DERWENT; IBM_TDB
18	64	S10 and (S11 or S12 or S13)	EPO; JPO; DERWENT; IBM_TDB
19	127950	inkjet or ink adj jet	EPO; JPO; DERWENT; IBM_TDB

	Hits	Search Text	DBs
20	0	S18 and S19	EPO; JPO; DERWENT; IBM_TDB
21	111762 3	print\$3	EPO; JPO; DERWENT; IBM_TDB
22	10	S18 and S21	EPO; JPO; DERWENT; IBM_TDB
23	1	("6395408").PN.	US-PGPUB; USPAT; USOCR
24	1	S10 and laminate and S19	EPO; JPO; DERWENT; IBM_TDB
25	39	S10 and laminate and S21	EPO; JPO; DERWENT; IBM_TDB
26	29	S25 not S22	EPO; JPO; DERWENT; IBM_TDB
27	6595	decor	US-PGPUB; USPAT; USOCR
28	7	S4 and S27	US-PGPUB; USPAT; USOCR
29	139160	calcium adj acetate or aluminum adj phosphate or citric adj acid	US-PGPUB; USPAT; USOCR
30	0	("26and28").PN.	US-PGPUB; USPAT; USOCR
31	72	S27 and S29	US-PGPUB; USPAT; USOCR
32	323034	dye	US-PGPUB; USPAT; USOCR
33	127078 9	print\$3 or ink or dye or pigment	US-PGPUB; USPAT; USOCR
34	14	S27 and S29 same S35	US-PGPUB; USPAT; USOCR
35	1396	decorative adj laminate	US-PGPUB; USPAT; USOCR
36	1703	pressure adj laminate	US-PGPUB; USPAT; USOCR
37	30	(S37 or S38) and (S4 or S29) same S35	US-PGPUB; USPAT; USOCR
38	394742	cellulosic or cellulose	US-PGPUB; USPAT; USOCR
39	338	S40 and print\$3 same S34 same S29	US-PGPUB; USPAT; USOCR
40	44707	luminescent or photoluminiscent	US-PGPUB; USPAT; USOCR

	Hits	Search Text	DBs
41	0	S40 and print\$3 same S34 same S29 same S42	US-PGPUB; USPAT; USOCR
42	1	S40 and S34 same S29 same S42	US-PGPUB; USPAT; USOCR
43	3	S40 and S34 same mordant same S42	US-PGPUB; USPAT; USOCR
44	476	S40 same print\$3 same S34 same (S4 or S29)	US-PGPUB; USPAT; USOCR
45	194	S40 same print\$3 same S34 same S29	US-PGPUB; USPAT; USOCR
46	467	S40 with (sheet or paper) and print\$3 same S34 same (S4 or S29)	US-PGPUB; USPAT; USOCR
47	366	S48 not S47	US-PGPUB; USPAT; USOCR
48	22	decorative and S48	US-PGPUB; USPAT; USOCR
49	7707	mordant	US-PGPUB; USPAT; USOCR
50	139160	calcium adj acetate or aluminum adj phosphate or citric adj acid	US-PGPUB; USPAT; USOCR
51	323034	dye	US-PGPUB; USPAT; USOCR
52	394742	cellulosic or cellulose	US-PGPUB; USPAT; USOCR
53	467	S54 with (sheet or paper) and print\$3 same S53 same (S51 or S52)	US-PGPUB; USPAT; USOCR
54	22	decorative and S55	US-PGPUB; USPAT; USOCR
55	1396	decorative adj laminate	US-PGPUB; USPAT; USOCR
56	1703	pressure adj laminate	US-PGPUB; USPAT; USOCR
57	1085506	S54 or paper	US-PGPUB; USPAT; USOCR
58	1171309	print\$3 or ink or dye	US-PGPUB; USPAT; USOCR
59	240664	abrasive or abrasion	US-PGPUB; USPAT; USOCR
60	943902	coating or overcoating	US-PGPUB; USPAT; USOCR

	Hits	Search Text	DBs
61	244	(S57 or S58) and S59 and S60 and S61 same S62	US-PGPUB; USPAT; USOCR
62	127336 2	powder or particles	US-PGPUB; USPAT; USOCR
63	113	(S57 or S58) and S59 and S60 and S61 same S62 same S64	US-PGPUB; USPAT; USOCR

	L #	Hits	Search Text	DBs
1	L1	1	("5422168").PN.	US-PGPUB; USPAT; USOCR
2	L2	152225	silica adj gel	US-PGPUB; USPAT; USOCR
3	L3	1396	decorative adj laminate	US-PGPUB; USPAT; USOCR
4	L4	1703	pressure adj laminate	US-PGPUB; USPAT; USOCR
5	L5	6595	decor	US-PGPUB; USPAT; USOCR
6	L6	99	abrasion adj resistant adj laminate	US-PGPUB; USPAT; USOCR
7	L7	70	2 and (3 or 4 or 5 or 6)	US-PGPUB; USPAT; USOCR
8	L8	4388	silica adj aerogel	US-PGPUB; USPAT; USOCR
9	L9	16	8 and (3 or 4 or 5 or 6)	US-PGPUB; USPAT; USOCR
10	L10	19891	silica adj (gel or aerogel)	EPO; JPO; DERWENT; IBM_TDB
11	L11	3550	abrasion adj resistant adj laminate or pressure adj laminate or decorative adj laminate or decor	EPO; JPO; DERWENT; IBM_TDB
12	L12	3	10 and 11	EPO; JPO; DERWENT; IBM_TDB
13	L13	1	("7026038").PN.	US-PGPUB; USPAT; USOCR

	L #	Hits	Search Text	DBs
14	L14	30	("20020025426" "4117198" "4255480" "4376812" "4473613" "4499137" "4517235" "4520062" "4532170" "4567087" "4713138" "4971855" "5037694" "5093185" "5141799" "5288540" "5344704" "5362557" "5422168" "5456949" "5500668" "5545476" "5558906" "5651795" "5731034" "5885678" "5891827" "6093473" "6290815" "6440538").PN. OR ("7026038").URPN.	US-PGPUB; USPAT; USOCR
15	L15	0	dye same aluminum adj phospate same print\$3	US-PGPUB; USPAT; USOCR
16	L16	0	dye same aluminum adj phospate	US-PGPUB; USPAT; USOCR
17	L18	3	dye same aluminum adj phosphate same print\$3	US-PGPUB; USPAT; USOCR
18	L19	2	dye same aluminum adj phosphate same mordant	US-PGPUB; USPAT; USOCR
19	L20	20	(dye or ink) with aluminum adj phosphate	US-PGPUB; USPAT; USOCR
20	L21	9	(dye or ink) same aluminum adj phosphate same paper	US-PGPUB; USPAT; USOCR
21	L22	90	(dye or ink) same aluminum adj phosphate	US-PGPUB; USPAT; USOCR
22	L17	48	dye same aluminum adj phosphate	US-PGPUB; USPAT; USOCR

	L #	Hits	Search Text	DBs
23	L23	1	("5545476").PN.	US-PGPUB; USPAT; USOCR



US006106654A

United States Patent [19]**Velin et al.**[11] **Patent Number:** **6,106,654**[45] **Date of Patent:** **Aug. 22, 2000**[54] **PROCESS FOR THE MANUFACTURING OF
A DECORATIVE THERMO-SETTING
PLASTIC LAMINATE**[75] Inventors: **Per-Erik Velin**, Helsingborg; **Nils-Joel
Nilsson**, Hässleholm; **Kent Lindgren**,
Perstorp, all of Sweden[73] Assignee: **Perstorp AB**, Perstorp, Sweden[21] Appl. No.: **08/973,688**[22] PCT Filed: **Jun. 18, 1996**[86] PCT No.: **PCT/SE96/00796**§ 371 Date: **Dec. 12, 1997**§ 102(e) Date: **Dec. 12, 1997**[87] PCT Pub. No.: **WO97/00172**PCT Pub. Date: **Jan. 13, 1997**[30] **Foreign Application Priority Data**

Jun. 19, 1995 [SE] Sweden 9502218

[51] **Int. Cl.⁷** **B32B 31/00**[52] **U.S. Cl.** **156/276; 156/279; 156/307.4;
427/204; 427/205; 428/148; 428/150**[58] **Field of Search** **156/279, 276,
156/307.4; 427/205, 204; 428/150, 148**[56] **References Cited****U.S. PATENT DOCUMENTS**

2,275,989 3/1942 Perry 156/279

3,190,786	6/1965	Magill et al.	156/279
3,661,673	5/1972	Merriam	156/279
4,940,503	7/1990	Lindgren et al.	156/279
5,362,557	11/1994	Albrinck et al.	
5,456,949	10/1995	Albrinck et al.	156/307.4

FOREIGN PATENT DOCUMENTS

0219769	4/1987	European Pat. Off.	
0329154	8/1989	European Pat. Off.	
0519242	12/1992	European Pat. Off.	
53-21284	2/1978	Japan	156/307.4

Primary Examiner—John J. Gallagher*Attorney, Agent, or Firm*—Stevens, Davis, Miller & Mosher,
L.L.P.[57] **ABSTRACT**

Process for the manufacturing of a decorative thermosetting laminate with a wear-resistant and a scratch resistant surface layer, wherein a continuous paper web is impregnated with melamine-formaldehyde resin, that one side of the web is coated with hard particles with a size of 30–90 μm . After drying, the other side is coated with a melamine-formaldehyde resin containing hard particles with an average particle size of 1–15 μm . The paper is, after drying, placed as the uppermost sheet in a laminate with the side coated with the smallest particles directed upwards towards a continuous pressure surface.

29 Claims, 1 Drawing Sheet